FIG. 1

GCTTCCCGAGGCTCCGCCACCAGCCGCGGCTTCTGTCCGCCTGCAGGGCATTCCA
GAAAGATGAGGAGGATATTTGCTGTCTTTATATTCATGACCTACTGGCATTGCTG
AACGCATTACTGTCACGGTTCCCAAGGACCTATATGTGGTAGAGTATGGTA
GCAATATGACAATTGAATGCAAATTCCCAGTAGAAAACAATTAGACCTGGC
TGCACTAATTGTCTATTGGGAAATGGAGGATAAGAACATTATTCAATTGTGC
ATGGAGAGGAAGACCTGAAGGTTCAGCATAGTAGCTACAGACAGAGGGCCC
GGCTGTTGAAGGACCAGCTCTCCCTGGGAAATGCTGCACTTCAGATCACAGA
TGTGAAATTGCAGGATGCAGGGGTGTACCGCTGCATGATCAGCTATGGTGGT
GCCGACTACAAGCGAATTACTGTGAAGTCAATGCCCCATACAACAAAATCA
ACCAAAGAATTTGGTTGTGGGATCCAGTCACCTCTGAACATGAACTGACATGT
CAGGCTGAGGGCTACCCCAAGGCCGAAGTCATCTGGACAAGCAGTGACCATC
AAGTCCTGAGTGGTAAGACCACCACCACCAATTCCAAGAGAGAGGAGAAGC
TTTCAATGTGACCAGCACACACTGAGAATCAACACACAACTAATGAGATTT
CTACTGCACTTTAGGAGATTAGATCCTGAGGGAAAACCATACAGCTGAATTG
GTCATCCCAGGTAATATTCTGAATGTGTCCATTAAAATATGTCTAACACTGTC
CCCTAGCACCTAGCATGATGTCTGCCTATCATGATGTCATTCAGTGATTGTTGAA
TAAATGAATGAATAACACTATGTTACAAAATATATCCTAATTCCTCAC
CTCCATTCATCCAAACCATATTGTTACTTAATAAACATTCAGCAGATATTTAT
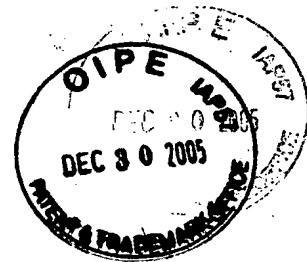GGAATAAAAAAAAAAAAAAAA

FIG. 2

CGAGGCTCCGCACCAGCCGCGCTTCTGTCCGCCTGCAGGGCATTCCAGAAAGA
TGAGGATATTTGCTGTCTTTATATTCATGACCTACTGGCATTTGCTGAACGCATT
TACTGTCACGGTTCCCAAGGACCTATATGTGGTAGAGTATGGTAGCAATATGAC
AATTGAATGCAAATTCCCAGTAGAAAAACAATTAGACCTGGCTGCACTAATTGT
CTATTGGGAAATGGAGGATAAGAACATTATTCAATTTGTGCATGGAGAGGAAG
ACCTGAAGGTTCAGCATAGTAGCTACAGACAGAGGGCCCGGCTGTTGAAGGAC
CAGCTCTCCCTGGGAAATGCTGCACTTCAGATCACAGATGTGAAATTGCAGGAT
GCAGGGGTGTACCGCTGCATGATCAGCTATGGTGGTGCCGACTACAAGCGAAT
TACTGTGAAAGTCAATGCCCCATACAACAAAATCAACCAAAGAATTTTGGTTGT
GGATCCAGTCACCTCTGAACATGAACTGACATGTCAGGCTGAGGGCTACCCCA
AGGCCGAAGTCATCTGGACAAGCAGTGACCATCAAGTCCTGAGTGGTAAGACC
ACCACCACCAATTCCAAGAGAGAGGAGAAGCTTTTCAATGTGACCAGCACACT
GAGAATCAACACAACAACTAATGAGATTTTCTACTGCACTTTTAGGAGATTAGA
TCCTGAGGAAAACCATACAGCTGAATTGGTCATCCCAGAACTACCTCTGGCACA
TCCTCCAAATGAAAGGACTCACTTGGTAATTCTGGGAGCCATCTTATTATGCCTT
GGTGTAGCACTGACATTCATCTTCCGTTTAAGAAAAGGGAGAATGATGGATGT
GAAAAAATGTGGCATCCAAGATACAAACTCAAAGAAGCAAAGTGATACACATTT
GGAGGAGACGTAATCCAGCATTGGAACTTCTGATCTTCAAGCAGGGATTCTCA
ACCTGTGGTTTAGGGGTTCATCGGGGCTGAGCGTGACAAGAGGAAGGAATGG
GCCCGTGGGATGCAGGCAATGTGGGACTTAAAAGGCCCAAGCACTGAAAATG
GAACCTGGCGAAAGCAGAGGAGGAGAATGAAGAAAGATGGAGTCAAACAGGG
AGCCTGGAGGGAGACCTTGATACTTTCAAATGCCTGAGGGGCTCATCGACGCC
TGTGACAGGGAGAAAGGATACTTCTGAACAAGGAGCCTCCAAGCAAATCATCC
ATTGCTCATCCTAGGAAGACGGGTTGAGAATCCCTAATTTGAGGGTCAGTTCCT
GCAGAAGTGCCCTTTGCCTCCACTCAATGCCTCAATTTGTTTTCTGCATGACTGA
GAGTCTCAGTGTTGGAACGGGACAGTATTTATGTATGAGTTTTTCCTATTTATTT
TGAGTCTGTGAGGTCTTCTTGTCATGTGAGTGTGGTTGTGAATGATTTCTTTTGA
AGATATATTGTAGTAGATGTTACAATTTTGTCGCCAAACTAAACTTGCTGCTTAA
TGATTTGCTCACATCTAGTAAAACATGGAGTATTTGTAAAAAAAAAAAAAAA

FIG. 3

292 secreted (245 amino acids)

Signal/IgV/IgC/hydrophilic tail
   (a)   (b)   (c)   (d)

Ig cysteines in large bold

MRIFAVFIFMTYWHLLNA   (signal)

FTVTVPKDLYVVEYGSNMTIECKFPVEKQLDLAALIVYWEMEDKN
IIQFVHGEEDLKVQHSSYRQRARLLKDQLSLGNAALQITDVKLQD
AGVYRCMISYGGADYKRITVKVNAPY   (IgV)

NKINQRILVVDPVTSEHELTCQAEGYPKAEVIWTSSDHQVLSGKT
TTTNSKREEKLFNVTSTLRINTTTNEIFYCTFRRLDPEENHTAEL
VIP   (IgC)

GNILNVSIKICLTLSPST (hydrophilic tail)

FIG. 4

292 membrane   (290 amino acids)

Signal/IgV/IgC/transmembrane (underlined)
plus cytoplasmic

Ig cysteines in large bold

MRIFAVFIFMTYWHLLNA   (signal)

FTVTVPKDLYVVEYGSNMTIE**C**KFPVEKQLDLAALIVYWEMEDKN
IIQFVHGEEDLKVQHSSYRQRARLLKDQLSLGNAALQITDVKLQD
AGVYR**C**MISYGGADYKRITVKVNAPY   (IgV)

NKINQRILVVDPVTSEHELT**C**QAEGYPKAEVIWTSSDHQVLSGKT
TTTNSKREEKLFNVTSTLRINTTTNEIFY**C**TFRRLDPEENHTAEL
VIP   (IgC)

ELPLAHPPNER<u>THLVILGAILLCLGVALTFIF</u>RLRKGRMMDVKKC
GIQDTNSKKQSDTHLEET   (transmembrane plus cytoplasmic)

FIG. 5A

AGATAGTTCCCAAAACATGAGGATATTTGCTGGCATTATATTCACAGCCTGC
TGTCACTTGCTACGGGCGTTACTATCACGGCTCCAAAGGACTTGTACGTG
GTGGAGTATGGCAGCAACGTCACGATGGAGTGCAGATTCCCTGTAGAACG
GGAGCTGGACCTGCTTGCGTTAGTGGTGTACTGGGAAAAGGAAGATGAGC
AAGTGATTCAGTTTGTGGCAGGAGAGGAGGACCTTAAGCCTCAGCACAGCA
ACTTCAGGGGGAGAGCCTCGCTGCCAAAGGACCAGCTTTTGAAGGGAAAT
GCTGCCCTTCAGATCACAGACGTCAAGCTGCAGGACGCAGGCGTTTACTGC
TGCATAATCAGCTACGGTGGTGCGGACTACAAGCGAATCACGCTGAAAGTC
AATGCCCCATACCGCAAAATCAACCAGAGAATTTCCGTGGATCCAGCCACTT
CTGAGCATGAACTAATATGTCAGGCCGAGGGTTATCCAGAAGCTGAGGTAA
TCTGGACAAACAGTGACCACCAACCCGTGAGTGGGAAGAGAAGTGTCACCA
CTTCCCGGACAGAGGGGATGCTTCTCAATGTGACCAGCAGTCTGAGGGTCA
ACGCCACAGCGAATGATGTTTTCTACTGTACGTTTTGGAGATCACAGCCAG
GGCAAAACCACACAGCGGAGCTGATCATCCCAGAACTGCCTGCAACACATC
CTCCACAGAACAGGACTCACTGGGTGCTTCTGGGATCCATCCTGTTGTTCC
TCATTGTAGTGTCCACGGTCCTCCTCTTCTTGAGAAAACAAGTGAGAATGCT
AGATGTGGAGAAATGTGGCGTTGAAGATACAAGCTCAAAAAACCGAAATGA
TACACAATTCGAGGAGACGTAAGCAGTGTTGAACCCTCTGATCGTCGATTG
GCAGCTTGTGGTCTGTGAAAGAAAGGGCCCATGGGACATGAGTCCAAAGAC
TCAAGATGGAACCTGAGGGAGAGAACCAAGAAAGTGTTGGGAGAGGAGCC
TGGAACAACGGACATTTTTTCCAGGGAGACACTGCTAAGCAAGTTGCCCAT
CAGTCGTCTTGGGAAATGGATTGAGGGTTCCTGGCTTAGCAGCTGGTCCTT
GCACAGTGACCTTTTCCTCTGCTCAGTGCCGGGATGAGAGATGGAGTCATG
AGTGTTGAAGAATAAGTGCCTTCTATTTATTTTGAGTCTGTGTGTTCTCACTT
TGGGCATGTAATTATGACTGGTGAATTCTGACGACATGATAGATCTTAAGAT
GTAGTCACCAAACTCAACTGCTGCTTAGCATCCTCCGTAACTACTGATACAA
GCAGGGAACACAGAGGTCACCTGCTTGGTTTGACAGGCTCTTGCTGTCTGA
CTCAAATAATCTTTATTTTTCAGTCCTCAAGGCTCTTCGATAGCAGTTGTTCT
GTATCAGCCTTATAGGTGTCAGGTATAGCACTCAACATCTCATCTCATTACA
ATAGCAACCCTCATCACCATAGCAACAGCTAACCTCTGTTATCCTCACTTCA
TAGCCAGGAAGCTGAGCGACTAAGTCACTTGCCCACAGAGTATCAGCTCTC
AGATTTCTGTTCTTCAGCCACTGTCCTTTCAGGATAGAATTTGTCGTTAAGAA
ATTAATTTAAAAACTGATTATTGAGTAGCATTGTATATCAATCACAACATGCC
TTGTGCACTGTGCTGGCCTCTGAGCATAAAGATGTACGCCGGAGTACCGGT
CGGACATGTTTATGTGTGTTAAATACTCAGAGAAATGTTCATTAACAAGGAG
CTTGCATTTTAGAGACACTGGAAAGTAACTCCAGTTCATTGTCTAGCATTAC
ATTTACCTCATTTGCTATCCTTGCCATACAGTCTCTTGTTCTCCATGAAGTGT
CATGAATCTTGTTGAATAGTTCTTTTATTTTTTAAATGTTTCTATTTAAATGATA
TTGACATCTGAGGCGATAGCTCAGTTGGTAAAACCCTTTCCTCACAAGTGTG
AAACCCTGAGTCTTATCCCTAGAACCCACATAAAAAACAGTTGCGTATGTTT
GTGCATGCTTTTGATCCCAGCACTAGGGAGGCAGAGGCAGGCAGATCCTG
AGCTCTCATTGACCACCCAGCCTAGCCTACATGGTTAGCTCCAGGCCTACA
GGAGCTGGCAGAGCCTGAAAAACGATGCCTAGACACACACACACACACACA
CACACACACACACACACACACACCATGTACTCATAGACCTAAGTGCACC
CTCCTACACATGCACACACATACAATTCAAACACAAATCAACAGGGAATTGT

FIG. 5B

CTCAGAATGGTCCCCAAGACAAAGAAGAAGAAAAACACCAAACCAGCTCTA
TTCCCTCAGCCTATCCTCTCTACTCCTTCCTAGAAGCAACTACTATTGTTTTT
GTATATAAATTTACCCAACGACAGTTAATATGTAGAATATATATTAAAGTGTC
TGTCAATATATATTATCTCTTTCTTTCTTTCTTCCTTTCTTTCTTTCTTTCTTTC
TTTCTTTCTTTCTTTCTTTCTTTCTTTCTTTCTTCCTTCCTTCCTTCCTTCCTTC
CTTCCTTCCTTCCTTTCTTTCTTTCTTTCTTTTTTTCTGTCTATCTGTACCTAAA
TGGTTGCTCACTATGCATTTTCTGTGCTCTTCGCCCTTTTTATTTAATGTATG
GATATTTATGCTGCTTCCAGAATGGATCTAAAGCTCTTTGTTTCTAGGTTTTC
TCCCCCATCCTTCTAGGCATCTCTCACACTGTCTAGGCCAGACACCATGTCT
GCTGCCTGAATCTGTAGACACCATTTATAAAGCACGTACTCACCGAGTTTGT
ATTTGGCTTGTTCTGTGTCTGATTAAAGGGAGACCATGAGTCCCCAGGGTA
CACTGAGTTACCCCAGTACCAAGGGGGAGCCTTGTTTGTGTCTCCATGGCA
GAAGCAGGCCTGGAGCCATTTTGGTTTCTTCCTTGACTTCTCTCAAACACAG
ACGCCTCACTTGCTCATTACAGGTTCTCCTTTGGGAATGTCAGCATTGCTCC
TTGACTGCTGGCTGCCCTGGAAGGAGCCCATTAGCTCTGTGTGAGCCCTTG
ACAGCTACTGCCTCTCCTTACCACAGGGGCCTCTAAGATACTGTTACCTAGA
GGTCTTGAGGATCTGTGTTCTCTGGGGGGAGGAAAGGAGGAGGAACCCAG
AACTTTCTTACAGTTTTCCTTGTTCTGTCACATGTCAAGACTGAAGGAACAG
GCTGGGCTACGTAGTGAGATCCTGTCTCAAAGGAAAGACGAGCATAGCCGA
ACCCCCGGTGGAACCCCCTCTGTTACCTGTTCACACAAGCTTATTGATGAGT
CTCATGTTAATGTCTTGTTTGTATGAAGTTTAAGAAAATATCGGGTTGGGCAA
CACATTCTATTTATTCATTTTATTTGAAATCTTAATGCCATCTCATGGTGTTGG
ATTGGTGTGGCACTTTATTCTTTTGTGTTGTGTATAACCATAAATTTTATTTTG
CATCAGATTGTCAATGTATTGCATTAATTTAATAAATATTTTTATTTATTAAAAA
AAAAAAAAAAAAAA

FIG. 6

MRIFAGIIFTACCHLLRAFTITAPKDLYVVEYGSNVTMECRFPVERELDLIALVVYWEKEDEQVIQFVAGEE
DLKPQHSNFRGRASLPKDQLLKGNAALQITDVKLQDAGVYCCIISYGGADYKRITLKVNAPYRKINQRISV
DPATSEHELICQAEGYPEAEVIWTNSDHQPVSGKRSVTTSRTEGMLLNVTSSLRVNATANDVFYCTFWR
SQPGQNHTAELIIPELPATHPPQNRTHWVLLGSILLFLIVVSTVLLFLRKQVRMLDVEKCGVEDTSSKNRN
DTQFEET.

FIG. 7

mB7-4 vs. hB7-4

69% identity

```
mB7-4    1   MRIFAGIIFTACCHLLRAFTITAPKDLYVVEYGSNVTMECRFPVERELDLLALVVYWEKE   60
             MRIFA  IF    HLL AFT+T PKDLYVVEYGSN+T+EC+FPVE++LDL AL+VYWE E
hB7-4    1   MRIFAVFIFMTYWHLLNAFTVTVPKDLYVVEYGSNMTIECKFPVEKQLDLAALIVYWEME   60

mB7-4   61   DEQVIQFVAGEEDLKPQHSNFRGRASLPKDQLLKGNAALQITDVKLQDAGVYCCIISYGG  120
             D+ +IQFV GEEDLK QHS++R RA L KDQL GNAALQITDVKLQDAGVY C+ISYGG
hB7-4   61   DKNIIQFVHGEEDLKVQHSSYRQRARLLKDQLSLGNAALQITDVKLQDAGVYRCMISYGG  120

mB7-4  121   ADYKRITLKVNAPYRKINQRI-SVDPATSEHELICQAEGYPEAEVIWTNSDHQPVSGKRS  179
             ADYKRIT+KVNAPY KINQRI  VDP TSEHEL CQAEGYP+AEVIWT+SDHQ +SGK +
hB7-4  121   ADYKRITVKVNAPYNKINQRILVVDPVTSEHELTCQAEGYPKAEVIWTSSDHQVLSGKTT  180

mB7-4  180   VTTSRTEGMLLNVTSSLRVNATANDVFYCTFWRSQPGQNHTAELIIPELPATHPPQNRTH  239
             T S+ E  L NVTS+LR+N T N++FYCTF R  P +NHTAEL+IPELP  HPP  RTH
hB7-4  181   TTNSKREEKLFNVTSTLRINTTTNEIFYCTFRRLDPEENHTAELVIPELPLAHPPNERTH  240

mB7-4  240   WVLLGSILLFLIVVSTVLLFLRKQVRMLDVEKCGVEDTSSKNRNDTQFEET  290
             V+LG+ILL L V  T +  LRK  RM+DV+KCG++DT+SK ++DT  EET
hB7-4  241   LVILGAILLCLGVALTFIFRLRKG-RMMDVKKCGIQDTNSKKQSDTHLEET  290
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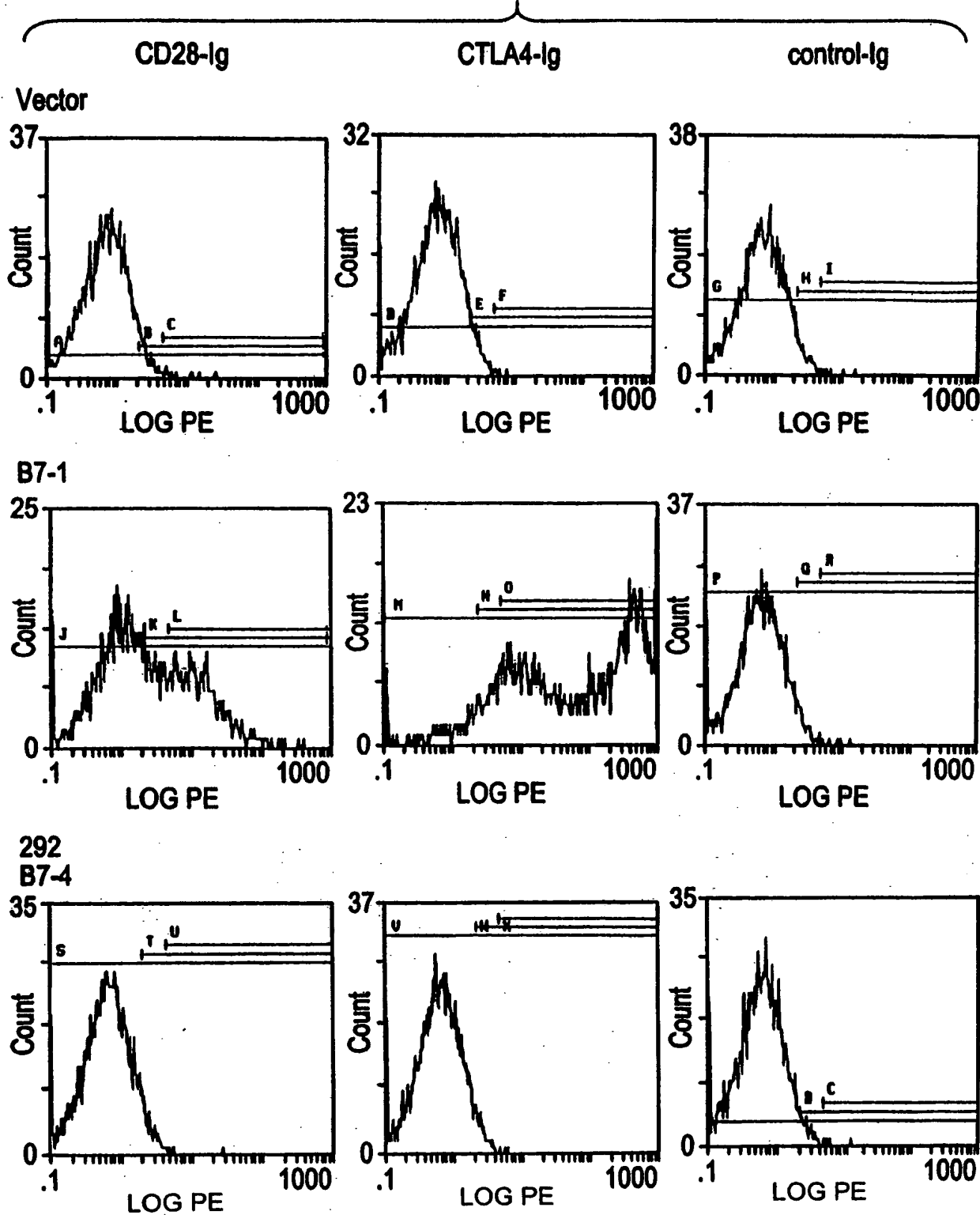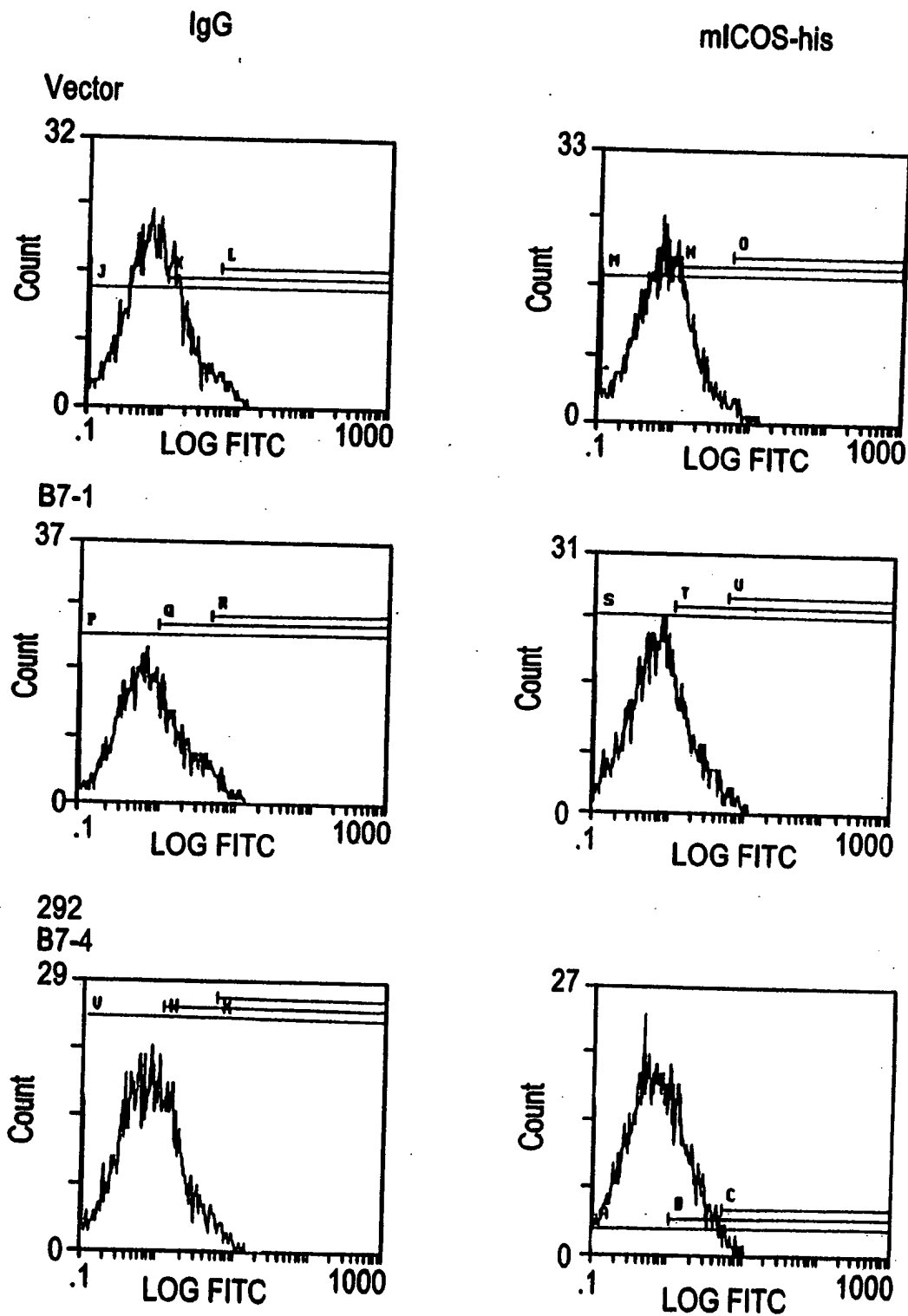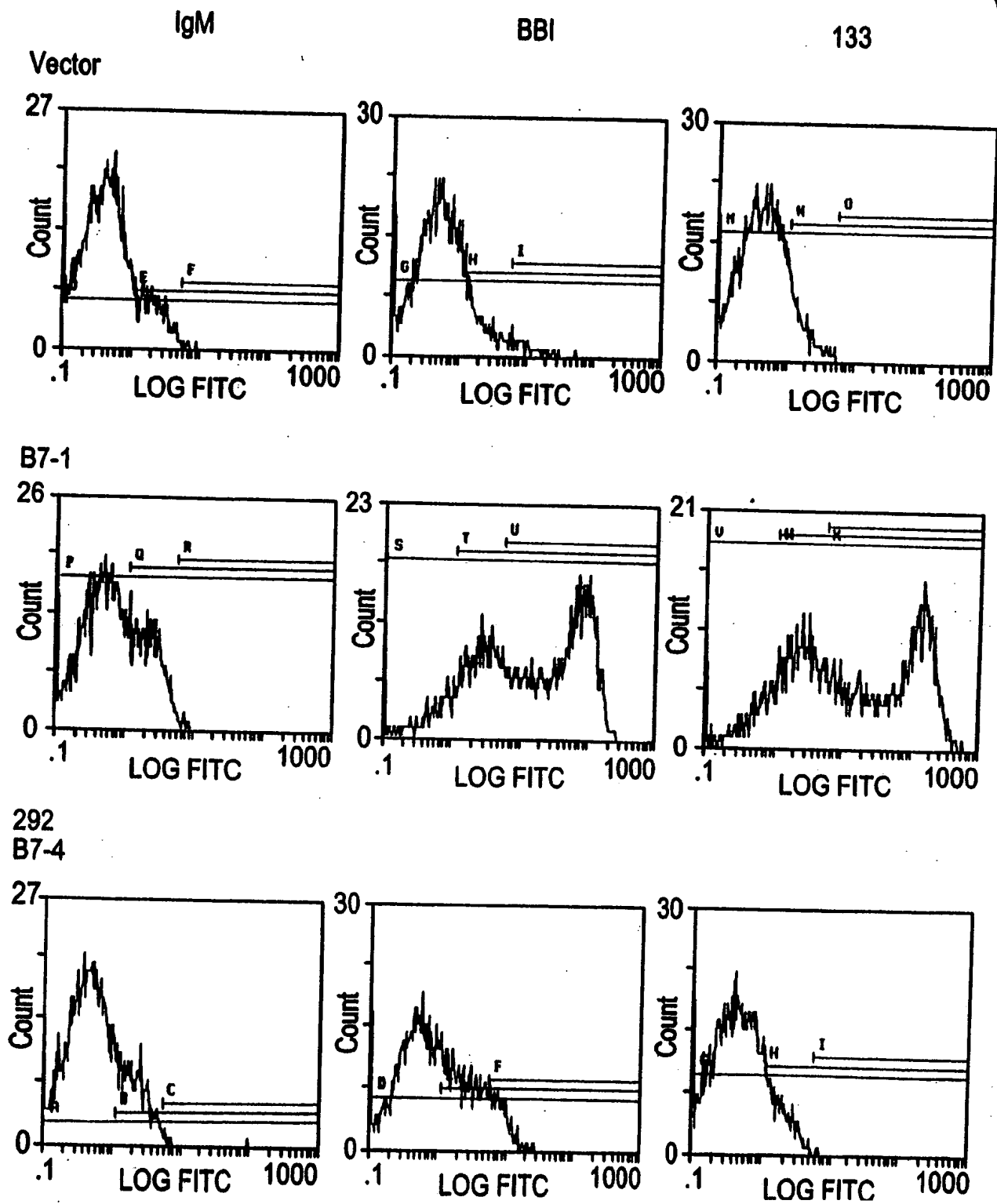
FIG. 8
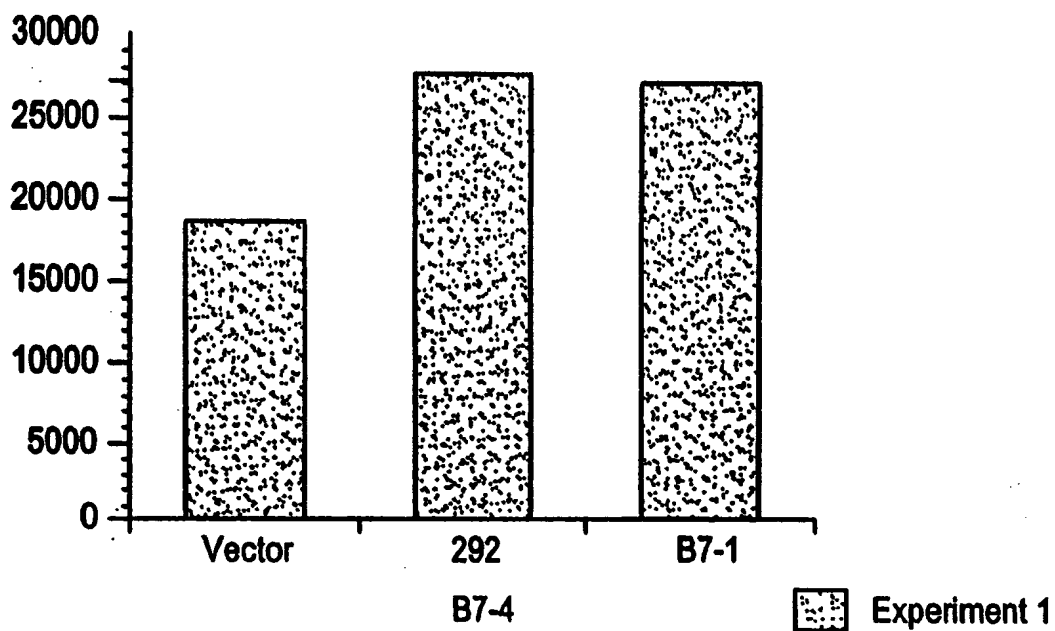
FIG. 9

IgG   mICOS-his

Vector

B7-1

292
B7-4

FIG. 10

FIG. 11

Bar chart with y-axis ranging from 0 to 30000. X-axis labels: Vector, 292, B7-1. Legend: Experiment 1. B7-4

FIG. 12

Bar chart with y-axis ranging from 0 to 9000. X-axis labels: Vector, 292, B7-1. Legend: Experiment 2. B7-4